

Amendments to the Claims:

This listing of claims will replace all prior versions, and listing of claims in the application.

1. (Original) A method for highly sensitive imaging, comprising:
forming a first well of a first polarity type wherein the first well is formed on an epitaxial layer of the first polarity type such that an intervening epitaxial material of the first polarity type exists between adjacent walls of the first well; and
forming a diode electrode structure of a second polarity type that is opposite the first polarity type wherein the diode electrode structure is one of an active diffusion layer of the second polarity formed on the intervening epitaxial material and a second well of the second polarity type formed within the intervening epitaxial material wherein the diode electrode structure is formed such that a first portion of the intervening epitaxial material is between the electrode structure and the first well.

2. (Original) The method of claim 1, further comprising minimizing the capacitance of the diode electrode structure in accordance with the equation:

$$S \propto A_{eff} \cdot QE_{optimized} \cdot \frac{q}{C_{minimized}}$$

where S is the sensitivity of a pixel, A_{eff} is the effective photosensitive area of the pixel, QE is the quantum efficiency of the pixel, q is the charge of an electron, and C is the capacitance of the diode structure.

3. (Original) The method of claim 1, further comprising applying a bias voltage across the first well and the diode electrode structure.

4. (Original) The method of claim 3, further comprising exposing a top surface of the intervening epitaxial material to light.

5. (Original) The method of claim 1, wherein the top surface of the intervening epitaxial material forms a continuous area surrounding the electrode structure.

6. (Original) The method of claim 1, wherein the intervening epitaxial material is contained within the first well.

7. (Original) The method of claim 1, wherein the epitaxial layer is formed on a P+ substrate.

Claims 8-20. (Canceled)